



# Forest Insect & Disease / Management

AN AERIAL SURVEY OF SPRUCE BUDWORM  
DAMAGE ON THE OTTAWA NATIONAL FOREST, MICHIGAN 1981

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## INTRODUCTION

Spruce budworm, Choristoneura fumiferana (Clemens), defoliation on white spruce, Picea glauca (Moench) Voss., and balsam fir, Abies balsamea (L.) Mill., was detected on the Ottawa National Forest in 1970. Forest Pest Management personnel have periodically conducted aerial and ground surveys for spruce budworm damage since that time (Erickson, 1972; Fowler, 1974; Anderson, 1975). Heavy defoliation was observed on more than 80,000 acres of Federal and private land during the 1980 aerial survey.<sup>1/</sup>

## OBJECTIVE

The principal objective was to determine the location, acreage, and severity of current spruce budworm defoliation within the Ottawa National Forest. The secondary objective was to map aerially detectable damage caused by other forest pests.

## METHODS

An aerial survey was conducted on the Ottawa National Forest on July 9 and 10, 1981. A Cessna 182 served as the survey aircraft. Flight lines were flown in east-west directions at 3 mile intervals at an airspeed of 100 miles per hour and an altitude of 1,000 to 1,500 feet above the terrain. Observations were made between the hours of 0830 and 1530. The flight crew consisted of a pilot and two observers. All signs of pest defoliation and/or damage were sketchmapped on half-inch-to-the-mile USDA Forest Service maps.

The following codes were used to designate severity of defoliation and stand condition:

### DEFOLIATION

L-Light, 0-50% of crown  
showing reddish-brown  
discoloration.

M-Moderate, 51-100% of crown  
showing reddish-brown  
discoloration.

H-Heavy, 51-100% of crown  
showing reddish-brown and  
grey discoloration.

<sup>1/</sup> Personal correspondence on file St. Paul Field Office.



## RESULTS

Spruce budworm defoliation decreased in 1981 (Table 1). The majority of the defoliation was light and scattered, with no heavy damage observed (Figure 1). Other damage mapped included areas of hardwood mortality and jack pine mortality (Table 2).

Table 1.--Acreage estimates of spruce budworm defoliation on the Ottawa National Forest, 1980 and 1981.

Spruce budworm defoliation	1980	1981	Net increase or decrease (percent)
Light	9,698	12,589	+23
Moderate	29,969	4,839	-84
Heavy	81,679	-0-	-100
TOTAL	121,346	17,428	-86

Table 2.--Acreage estimates of jack pine and hardwood mortality on the Ottawa National Forest, 1981.

	Federal acres	Private acres	Total acres
Hardwood Mortality	4,217	933	5,150
Jack Pine Mortality	322	-0-	322

\*Land ownership classifications are based on the National Forest map color code (green/Federal, white/private) for Table 2.



## DISCUSSION AND RECOMMENDATIONS

The amount and severity of spruce budworm defoliation in 1981 decreased significantly over defoliation observed in 1980. No heavy defoliation was found, and the number of acres defoliated decreased by 86 percent over 1980 acreages within National Forest boundaries. Hardwood mortality was predominately elm with some maple mortality on the southeast section of the Forest. Hardwood areas should be field checked to determine the feasibility of salvage cuts. Jack pine mortality has since been field checked on the Kenton Ranger District and a bark beetle, Ips pini (Say), has been identified as the cause of the mortality in mature and overmature jack pine stands. The Forest is now establishing cutting priorities in order to accelerate salvage operations in these stands. A 1982 survey should be conducted to confirm the suspected collapse of the spruce budworm population.

## LITERATURE CITED

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